



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,990	02/19/2002	Chi Lam Wong	USP1787A-CLW	7105

7590 06/02/2004
RAYMOND Y. CHAN
1050 OAKDALE LANE
ARCADIA, CA 91006

EXAMINER

PRICE, CARL D

ART UNIT	PAPER NUMBER
----------	--------------

3749

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/079,990

Applicant(s)

WONG, CHI LAM

Examiner

CARL D. PRICE

Art Unit

3749

-- The MAILING DATE of this communication appears on the cover sheet with the correspond nc address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) 17-20,25-34,38 and 45-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16,21-24,35-37 and 39-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement. §

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-16, 21-24, 35-37 and 39-44 have been considered but are moot in view of the new ground(s) of rejection.

Priority

Acknowledgment is made of applicant's intention to submit, before allowance, a certified copy of **CH 01246118.0** prior to allowance of the instant application is acknowledged. Applicant having not yet filed a certified copy of the **CH 01246118.0** application as required by 35 U.S.C. 119(b). Certified copies the three remaining priority documents filed in China have been received and placed in the file.

Disclosure

Applicant's amendments to the disclosure related to characters 46B, M and N are acknowledged.

The amendments made to claims 7-10 are acceptable to overcome the rejection under 35 U.S.C. 112, second paragraph.

Regarding the rejection of claims 1-16, 21-24, 35-37 and 39-44, the examiner maintains the position that for the purpose to increase the number and character of torch flames and to provide increased flame stability a torch lighter as set forth in applicant's claims would have been obvious to a person having ordinary skill in the art. The newly discovered prior art

reference of Anderson et al (US006171544B1) is now relied on in addition to Lonergan to teach the advantages of increasing the number and character of torch flames for providing increased flame stability in torches, applicant having now amended the scope of the claimed invention in order to place greater emphasis on the relative amounts of flow directed through various nozzle openings, etc.

Response to Amendment

The amendment filed 02-27-2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

- 1) In amended claim 1, line 31, the phrase “wherein a large portion of said mixture gas at said emitting opening ...” introduces new matter into the disclosure since the term “a large portion” and the principle of emitting “a large portion of said mixture” is not supported by the original disclosure.
- 2) In amended claim 1, line 35, the phrase “... diverging a small portion of said mixture gas at said emitting opening ...” introduces new matter into the disclosure since the term “a small portion” and the principle of emitting a diverging “small portion of said mixture gas” is not supported by the original disclosure.
- 3) In amended claims 11-16, the phrase “wherein said large portion of said mixture gas is flown ...” introduces new matter into the disclosure since the term “said large portion” and the principle of flowing “a large portion” of mixture gas is not supported by the original disclosure.

Applicant is required to cancel the new matter in the reply to this Office Action.

See M.P.E.P. 2163

I. GENERAL PRINCIPLES GOVERNING COMPLIANCE WITH THE "WRITTEN DESCRIPTION" REQUIREMENT FOR APPLICATIONS

B. New or Amended Claims

"The claims as filed in the original specification are part of the disclosure and, therefore, if an application as originally filed contains a claim disclosing material not found in the remainder of the specification, the applicant may amend the specification to include the claimed subject matter. In re Benno, 768 F.2d 1340, 226 USPQ 683 (Fed. Cir. 1985). Thus, the written description requirement prevents an applicant from claiming subject matter that was not adequately described in the specification as filed. New or amended claims which introduce elements or limitations which are not supported by the as-filed disclosure violate the written description requirement. See, e.g., In re Lukach, 442 F.2d 967, 169 USPQ 795 (CCPA 1971) (subgenus range was not supported by generic disclosure and specific example within the subgenus range); In re Smith, 458 F.2d 1389, 1395, 173 USPQ 679, 683 (CCPA 1972) (a subgenus is not necessarily described by a genus encompassing it and a species upon which it reads).

While there is no in haec verba requirement, newly added claim limitations must be supported in the specification through express, implicit, or inherent disclosure. An amendment to correct an obvious error does not constitute new matter where one skilled in the art would not only recognize the existence of the error in the specification, but also recognize the appropriate correction. In re Oda, 443 F.2d 1200, 170 USPQ 268 (CCPA 1971). ... "

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, **unless**

Art Unit: 3749

the references have been cited by the examiner on form PTO-892, or by applicant on form PTO-1449, they have not been considered.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings (Figures 5-7) must show every feature of the invention specified in the claims. Therefore, the diverging two “or more” nozzle ducts (see claim 1, lines 26, 32, 43, for example) must be shown or the feature(s) canceled from the claim(s). While other non-elected embodiments present in applicant’s disclosure appear to include “two or more” nozzles, the embodiment elected by applicant (Figures 5-7) is not shown to have more than two diverging nozzles, nor does applicant describe the possibility of such an arrangement in the written description.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

It is noted that No new matter should be entered.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

- 1) In amended claim 1, line 31, the “a large portion of said mixture gas at said emitting opening”.

- 2) In amended claim 1, line 35, the phrase “diverging a small portion of said mixture gas at said emitting opening”.
- 3) In amended claims 11-16, the phrase “wherein said large portion of said mixture gas is flown”.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-16, 21-24, 35-37 and 39-44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The added material which is not supported by the original disclosure is as follows:

- 1) In amended claim 1, line 31, the phrase “wherein a large portion of said mixture gas at said emitting opening ...” introduces new matter into the disclosure since the term “a large portion” and the principle of emitting “a large portion of said mixture” is not supported by the original disclosure.
- 2) In amended claim 1, line 35, the phrase “... diverging a small portion of said mixture gas at said emitting opening ...” introduces new matter into the disclosure

since the term “a small portion” and the principle of emitting a diverging “small portion of said mixture gas” is not supported by the original disclosure.

- 3) In amended claims 11-16, the phrase “wherein said large portion of said mixture gas is flown ...” introduces new matter into the disclosure since the term “said large portion” and the principle of flowing “a large portion” of mixture gas is not supported by the original disclosure.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16, 21-24, 35-37 and 39-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, line 31, the terms “extended within” cause the claim to be misdescriptive of the invention disclosed and shown (i.e. – Figures 5-7) by applicant. While the outlet/ignition ends of the diverging nozzle ducts are in communicate with, or open into the ignition chamber, it can not be said that the ignition ends “extend within”, or into, the ignition chamber. This is in contrast to, for example, nonelected species (e.g. – figure 4) where the nozzle ducts (4311A) do indeed extend into the ignition chamber (44).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 3749

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16, 21-24,35-37, 39-44 rejected under 35 U.S.C. 103(a)

Claims 1-16, 21-24,35-37 and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of JP '434 (Japanese 05-240434) in view of Lonergan and Anderson et al (US006171544B1).

JP '434 shows and discloses (figure 7) a fuel nozzle assembly including a nozzle body having a root opening and root chamber (29, for example), an emitting opening, an air inlet (L), wherein said air inlet is positioned adjacent to said root opening to define an elongated mixing chamber (K) axially extended between the air inlet to the emitting opening. JP '434 shows a combustion housing (F; figure 5) supported around the emitting opening of the nozzle body defining an ignition chamber (see 20) therein; and a single (R), or a plurality (18), of elongated nozzle ducts, each having an ignition end and a root end extending to a ceiling of the root chamber. JP '434 also discloses a torch stabilizing arrangement, in the form of elongated (gear shaped) emitting openings (Q) providing a plurality of root flame (illustrated in figures 6 and 7) portions which form stable root flames for igniting the mixture gas ejected from the ignition ends of the nozzle ducts for stabilizing and holding the spaced flames. JP '434 relies on a having a micro nozzle pore and filter (10, 11, 12) arrangement for vaporizing and delivering liquefied fuel from a valved container to a flame head in a windproof lighter having a combustion chamber and

Art Unit: 3749

ignition means. JP '434 includes a casing having a liquid fuel gas storage and a fuel valve which is actuated by a fuel lever pivotally mounted in the casing for releasing fuel there from toward and ignition unit generating sparks. JP '434 however does not disclose a mixing chamber diameter of 1 mm to 2.5 mm, a micro nozzle pore diameter of 0.05 mm to 0.12 mm, a "mesh" filter, and the duct spacing as set forth in applicant's claims.

Lonergan teaches, form the same nozzle field of endeavor as JP '434, a fuel nozzle assembly including a nozzle body having a root opening and root chamber (within 24), an emitting opening (28', for example), an air inlet (24), wherein said air inlet is positioned adjacent to said root opening to define an elongated mixing chamber (21') axially extended between the air inlet to the emitting opening. Lonergan shows a combustion housing (27) supported around the emitting opening of the nozzle body and defines an ignition chamber therein; and a plurality of elongated nozzle ducts (25, 25a, 25^x), each having an ignition end and a root end extending to a ceiling of the root chamber. Lonergan also discloses a torch stabilizing arrangement providing a plurality of root flames (26, 26a, 26x) to form stable root flame (see figures 4a, 4b, 7a) portions which form stable root flames for igniting the mixture gas ejected from the ignition ends of the nozzle ducts for stabilizing and holding the spaced flames. The plurality of elongated ducts of Lonergan are disclosed as optionally arranged parallel (25), or diverging (25a, 25x).

Anderson et al (US006171544B1) teaches (see the entire document; in particular see column 3, lines 30-34 and line 67 which discuss "mixtures of fuel and oxidant" directed through openings 4,8 and 9), form the same nozzle field of endeavor as JP '434, and Lonergan, the

Art Unit: 3749

advantages providing diverging jet-like torch flames, surrounded by small stabilizing flames, for providing increased flame stability in torches.

See also Anderson et al (column 4, line 57- column 5, line 22):

“10) Preferably, ... Volume 11 formed by extension 10 establishes a protective zone which serves to protect the gas streams and the fuel and oxidant immediately upon their outflow from lance end 2 thus helping to achieve coherency for each gas jet. The protective zone induces recirculation of the fuel and oxidant around the gas jets and in some cases around each individual gas jet. Thus, even though fuel and oxidant may not be provided initially into the volume 11 completely around the gas jets, the recirculation of the fuel and oxidant within the protective zone serves to ensure that one or more effective flame envelopes are formed so as to establish coherency for each gas jet.

(11) The flow of each gas jet remains distinct from the flow of all the other gas jets passed out from the nozzle openings of lance 1 for the entire length of such gas jet until the gas jet reaches its target. ... This is in contrast to what happens when conventional gas jets are ejected from the same lance. With such conventional gas jets, the jets quickly merge or flow together to form a single gas jet. The gas jets remain distinct for a distance of at least 10 nozzle exit diameters, typically at least 20 nozzle exit diameters, and generally for a distance within the range of from 20 to 100 nozzle exit diameters.

In regard to claims 1-16, 21-24, 35-37 and 39-44, for the purpose of providing a suitable optional arrangement for the nozzle duct of JP '434, it would have been obvious to a person having ordinary skill in the art to modify the single duct of JP '4534 to be at least two diverging ducts, to increase the number of torch flames and flame stability, in view of the teaching of Lonergan and Anderson et al. In regard to claims 1 and 6-10, in particular, since the mixing chamber diameter, a micro nozzle pore, filter material, and the duct spacing for a given burner head arrangement would depend necessarily depend on numerous design concerns such as the type of fuel burned, the overall size and shape of the burner, desired flame size, etc., to select the mixing chamber diameter of 1 mm to 2.5 mm, a micro nozzle pore diameter of 0.05 mm to 0.12 mm, a “mesh” filter, and the duct spacing as set forth in applicant's claims, can be viewed a

nothing more than a mere matter of choice in design absent the showing of any new or unexpected results there from over the prior art of record.

Conclusion

THIS ACTION IS MADE FINAL

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

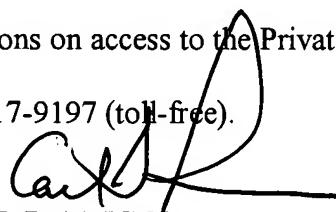
USPTO CUSTOMER CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **CARL D. PRICE** whose telephone number is 703-308-1953. The examiner can normally be reached on Monday through Friday between 6:30am-3:00pm.

Art Unit: 3749

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ira Lazarus can be reached on 703-308-1935. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



CARL D. PRICE
Primary Examiner
Art Unit 3749

cp

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-240434

(43)Date of publication of application : 17.09.1993

(51)Int. Cl.

F23Q 2/16

F23Q 2/16

(21)Application number : 04-193426

(71)Applicant : SUZUKI NARIAKI

(22)Date of filing : 26.06.1992

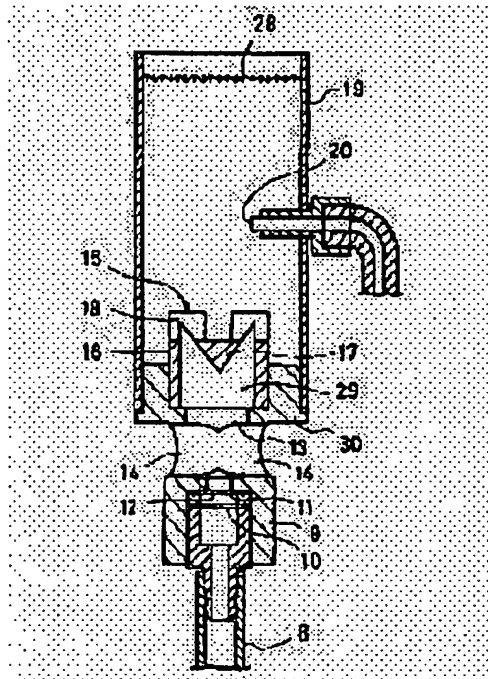
(72)Inventor : NAITO YOSHITSUGU

(54) GAS LIGHTER

(57)Abstract:

PURPOSE: To provide a gas lighter in which a flame is not largely projected out of the lighter, almost of the flame is maintained within a combustion cylinder, the flame is highly resisted against wind, its ignition is easily carried out, a proper flame power can be attained with a less amount of fuel gas, a safe operation is assured, its size is small and it has a convenience in carrying.

CONSTITUTION: A flow speed of fuel gas injected from a fuel tank is increased by a nozzle hole 12, air is taken from a suction hole 14 under its negative pressure and then the fuel gas and the air are mixed to each other at a mixing pipe 9. The mixture is dispersed at a dispersion cylinder 15 and its speed is decreased there and further its speed is decreased and dispersed by a distributor 17 at the extremity end thereof, the mixture is flowed into an annular space in the combustion cylinder 19 through the dispersion hole 18, flowing-out of the gas flow is made relatively large at a central part of the upper part within the combustion cylinder and the mixture is ignited by an ignition means under the flow speed of the combustible mixture gas of proper degree and then the mixture is burned within the combustion cylinder.



LEGAL STATUS

[Date of request for examination] 26.06.1992

[Date of sending the examiner's decision of rejection] 28.02.1995

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 2545014

[Date of registration] 25.07.1996

[Number of appeal against examiner's decision of rejection] 07-06723

[Date of requesting appeal against examiner's decision of rejection] 30.03.1995

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

(9)日本特許庁 (J.P)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開平5-240434

(43)公開日 平成5年(1993)9月17日

(51)Int. Cl.⁵

F 23 Q 2/10

識別記号 庁内整理番号

F 01 A 8918-3K

F 02 Z 8918-3K

F I

技術表示箇所

審査請求 有 発明の枚数(全 6 頁)

(21)出願番号

特願平4-193426

(62)分割の表示

特願昭61-235997の分割

(22)出願日

昭和61年(1986)10月2日

(71)出願人

000251598

鈴木 成秋

東京都板橋区弥生町61-7

(72)発明者

内藤 教雄

東京都板橋区弥生町61-6 成通工業有限
会社内

(74)代理人

弁護士 永田 成三郎

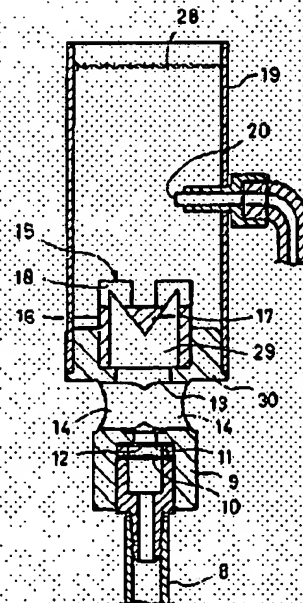
(54)【発明の名称】 ガスライター

(57)【要約】

(修正有)

【目的】 火炎が外部に大きく突出することなく、燃焼筒内に炎の大部分を維持させ、風に強く、点火が容易で少ない燃料ガスで速度の火力が得られ、安全小型で携帯に便利なガスライターを得ようとする。

【構成】 燃料タンクから噴出された燃料ガスの流速をノズル孔12により強め、その負圧により吸気孔14から空気を取り入れ混合管9にて混合し、これを拡散筒15において拡散減速して先端の分配体17により更に減速拡散の上、拡散孔18より燃焼筒19内の環状空間内に流入し、燃焼筒内の上部中央部分でガス流の流出を比較的大きくし、その下方において速度の可燃混合ガスの流速として点火手段により内部で点火し、燃焼筒内で燃焼する。



(4)

特開平5-240434

5

6

19の内部下方と拡散筒15外周間に形成する環状空間内に開口し、燃焼筒19の内部のほぼ中間の位置には放電電極20の先端が突出されている。放電電極20には高電圧発電機構21から高電圧が供給されるようになっており、高電圧発電機構21は操作子22を操作することにより発電が行なわれるようになっている。上記操作子22の押し下げ時に操作レバー23が操作を受け、ガス噴出路開閉弁3の燃料ガス噴出管7を持ち上げ燃料ガスの噴出を開始させるようになっている。

【0021】ケース1の上端にはキャップ24が被せられ、このキャップ24は枢支軸25を中心に回動し開閉が行なえるようになっている。

【0022】チューブ8、混合管9、燃焼筒19を断熱空腔27が包囲し、その空腔27に接するケース1に開口させた多数の空気孔26が設けられており、外部の空気が導入されるようになっている。

【0023】以上のとおりの構成をもつから、キャップ24を開き、操作子22を押し下げると、操作レバー23が押され、この操作レバー23の支点23aを中心とした回転によりガス噴出路開閉弁3の燃料ガス噴出管7が持ち上げられ、これにつれて弁座6が上昇して弁座4から離れ、燃料ガス噴出管7から燃料ガスが噴出される。この燃料ガスはチューブ8を通り、フィルター10を経てノズル板11のノズル孔12から混合室13内に急速な流れとして噴出する。この燃料ガスの急速な流れにより、その噴出ガスの周囲に負圧が生じて吸気孔14から空気が吸い込まれる。

【0024】吸気孔14からの空気は混合管9内でノズル孔12からの燃料ガスと急速に混合され、放射状に混合室13から拡散筒15の拡散室29に噴出し、この拡散筒15の先端に形成する分配体（円錐体）17のテーパ一面に衝突して減速しながら拡散され、拡散孔18から燃焼筒19の下部に形成する環状空間内に流出し、この燃焼筒19の下方では略水平に、上方では略垂直に放射状に拡散しながら上昇し、内壁に衝突する混合ガスは更に減速と拡散をすることによって速度が慢まり、これらにより燃焼筒内の上部中央部分で燃焼可能な混合ガス流の流速が比較的大きいものとなり、これに比較して下部付近では燃焼筒下部中央部からの流出がなく、拡散孔18から流出するガスの粒数域となっているのみであり、こうして下端に近づくに従い順次弱い流速の混合ガスが得られ、燃焼筒19内の十分深い位置で混合ガスの流速が十分弱められて炎の基部を燃焼筒19の深い位置に作る事ができ、かつ、点火に適したものとなる。

【0025】この時点で操作子22を更に押し下げて高電圧発電機構21から高電圧を発生させ、放電電極20からの放電電極を射撃する燃焼筒19の内壁又は拡散筒15の先端部分のいずれかの間に放電火花が作られ、燃焼筒19内の混合ガスに点火される。この場合、燃焼筒1

9内に噴出されている燃料ガスはすでに燃焼に十分な空気との混合状態となっているため、燃焼筒19内では青白い炎で完全燃焼が行なわれる。

【0026】なお、上記実施例において、燃焼筒19内で燃焼するガスは完全に青白い炎であるから、白昼の屋外等での使用時には燃焼の有無を確認しにくい場合があり、この確認を容易にするため、燃焼筒19の上部に極く細いニクロム線からなる網28を設ける。

【0027】上記網28は、燃焼筒19内の炎により加熱されて赤熱するので、屋外等においても上記ガスの燃焼を容易に確認することができる。この網28は、ニクロム線のほか、耐熱性のある細い線材、例えばセラミック等であればどのようなものでもよい。また、上記燃焼の確認手段としては、実施例記載の形状の網28に限定されるものではないことは明らかである。

【0028】更に、点火手段も高電圧発電機構に限定されるものではなく、適宜の点火火花を発生するものであればよく、その燃料タンク、ガス噴出弁機構、ガス注入機構等についても、上記実施例に限らず、この発明の要旨とする拡散筒と燃焼筒に適合するものであれば、どのような構成のものでもよい。

【0029】

【発明の効果】以上の通りこの発明は構成されるから、燃焼筒内の上部中央部分では可燃混合ガス流の流速を比較的大きくすることができるので、その下方での上記ガス流の流速を点火に適した流速にすることができ、炎の基部を燃焼筒内の深い位置に作る事ができるから、従来のガスライターの噴出ガスのように作られる炎の大部分が大気中に突出することなく風に影響されず点火と燃焼ができるとともに、屋外においても静かな点火燃焼を行なうことができる。しかも、燃焼筒内で短い炎で完全燃焼させることができるため、燃費が少なく安全性が高く、また従来のもののように袖火を作って点火させる必要もなく、長い混合管を必要としない小型のガスライターを得ることができる等の優れた効果をもつものである。

【図面の簡単な説明】

【図1】この発明の実施例の縦断面図。

【図2】図1の燃焼筒の平面図。

【図3】図1の混合管と燃焼筒の側面図。

【図4】図3の縦断側面図。

【図5】従来のガスライターの部分断面図。

【図6】図5のノズル部分の拡大断面図。

【図7】長い混合管を用いる従来のガスライターの部分断面図。

【符号の説明】

- 1 ケース
- 2 燃料タンク
- 3 ガス噴出路開閉弁
- 4 弁座

:(5)

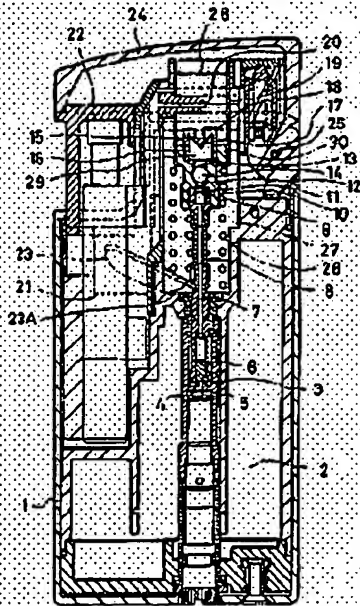
特開平5-240434

8

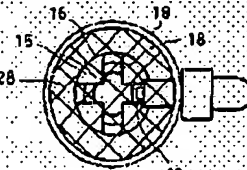
- 5 弁孔
- 6 弁体
- 7 燃料ガス噴出管
- 8 チューブ
- 9 混合管
- 10 フィルター
- 11 ノズル板
- 12 ノズル孔
- 13 混合路
- 14 吸気孔
- 15 拡散筒
- 16 筒体
- 17 分配体 (円錐体)
- 18 拡散孔

* 19 焚焼炉
20 放電機
21 高電圧充電機
22 操作子
23 操作レバー
23A 支点
24 キャップ
25 担支軸
26 空気孔
10 27 断熱空隙
28 網
29 拡散室
30 混合管の先端部

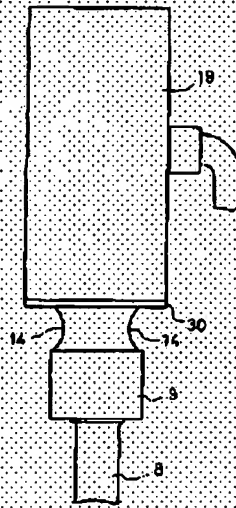
【圖 1】



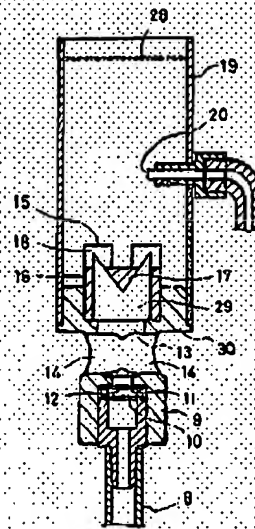
【圖2】



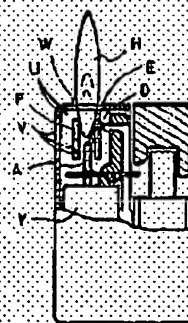
〔圖3〕



【圖4】



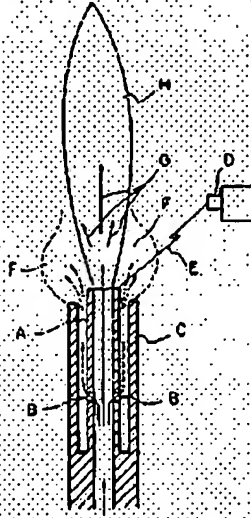
【圖5】



(5)

特許平5-240434

【図6】



【図7】

